

Graduate School of Engineering, Department of Material and Life Science

Miyata's Research Group

Our Research aims are:

- To design and synthesize organic compounds which are capable of efficiently self-assembling in crystalline state by certain intermolecular interactions.
- To reveal the crystal structures of the compounds and identify intermolecular interactions working in the crystals precisely.
- Ultimately, to control molecular arrangements and predict crystal structures.
- To develop new reactions or optical resolution in the nano-spaces provided by self-assembled architectures.

Staffs

MIYATA, Miki (Professor)

tel : +81-6-6879-7406

e-mail: miyata@mls.eng.osaka-u.ac.jp

TOHNAI, Norimitsu (Associate Professor)

tel : +81-6-6879-7404

e-mail: tohnai@mls.eng.osaka-u.ac.jp

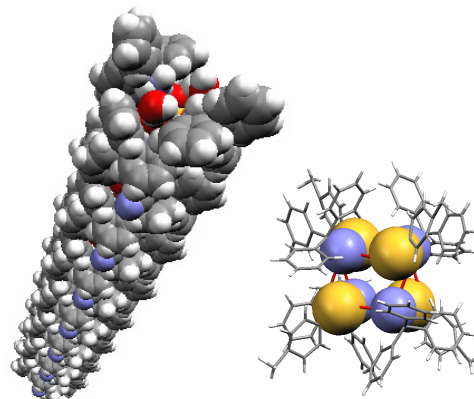
HISAKI, Ichiro (Assistant Professor)

tel : 06-6879-7405

e-mail: hisaki@mls.eng.osaka-u.ac.jp

Web Page

<http://www.molrec.mls.eng.osaka-u.ac.jp/>



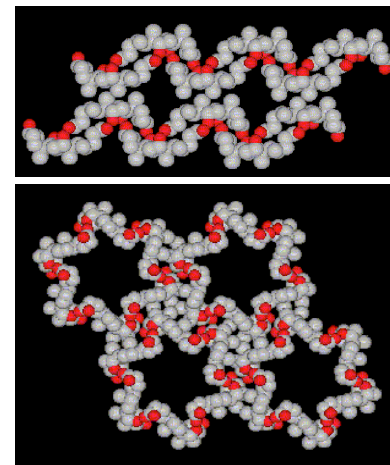
Organic molecular tube and dice.

Molecular Architectures

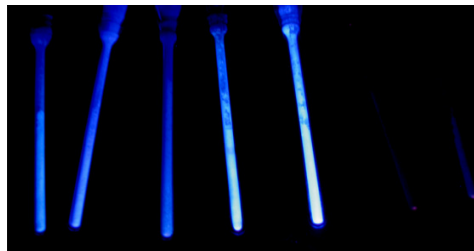
Various molecular architectures can be achieved by controlling intermolecular interactions in self-assembly process. The architectures are potentially applicable for a artificial enzymes or molecular machines.

Molecular Vessels

Self-assembly processes of certain molecules can give nano-spaces (molecular vessels) which are capable of accommodate other molecules. These are called "inclusion compounds" and are applied for preparation and separation of compounds in engineering processes.



Molecular vessels composed of cholic acids.



Change of fluorescence behavior of a chromophore upon molecular arrangement.

Effective functionality

We believe that effective functionality of solid materials should be provided from well-controlled molecular arrangements. On the basis of this concept, we are working on development of new functional materials.